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AN
ACCOUNT
OF SOME
Experiments and *Obſervations*
ON
Mrs. STEPHENS's *Medicines* for diſſolving the *STONE*:

WHEREIN

Their DISSOLVING POWER is inquir'd
into, and ſhown.

By *STEPHEN HALES*, D. D. F. R. S.
RECTOR of *Faringdon*, *Hampſhire*; and MINISTER of
Teddington, *Middleſex*.

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To which is added,
A SUPPLEMENT to a Pamphlet, intitled,
A View of the preſent Evidence for and againſt
Mrs. STEPHENS's *Medicines*, &c.

BEING

A COLLECTION of ſome Particulars relating to the Diſcovery of theſe Medicines, their
Publication, Uſe and Efficacy.

By *DAVID HARTLEY*, M.A. F.R.S.

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An ACCOUNT *of ſome* EXPERIMENTS *and* OBSERVATIONS *on* *Mrs.* STEPHENS's *Medicines for the* *STONE*, &c.

SECT. I.

1. MRS. *STEPHENS*'s Medicines having been found by Experience to have been very effectual in diſſolving Stones in the Bladders of ſeveral Perſons, who have perſevered in taking them a due Time; but they being withal very nauſeous, by reaſon of the great Quantity of Soap therein, I thought it proper to inquire wherein the principal Virtue and Efficacy of the Medicines lay, whence haply Means might be found to make them both leſs nauſeous, and more efficacious. And ſure a Matter of this Importance well deſerves our moſt diligent Reſearches, to be well aſſured whether it may turn to the Detriment or Advantage of Mankind.

2. And in order to this Enquiry, I procured two large *Calculus*'*s*; one of them was a very large one, given me by Mr. *Sharp* the Surgeon, which I call *A*; this I ſawed into ſeveral Pieces with the Spring of a Watch.

3. The other *Calculus*, which I name *B*, was given me by Mr. *Nurſe* the Surgeon; it is called the *Mulberry Stone*, on account of the great Roughneſs of its Surface: It was of a dark brown Colour, and ſo exceeding hard, that it looked like a poliſhed Marble, where it was ſawn in Pieces.

4. I boiled a Piece of *A* for an Hour in Mrs. *Stephens*'s Medicines, *viz.* a Decoction of Soap mixed with burnt Egg-ſhells, which had no ſenſible Effect in diſſolving it, tho' 'tis probable from Numb. 49. that it would have been diſſolved in longer boiling.

5. Nor had boiling in liquid Soap any ſenſible Effect. Liquid Soap is Soap diſſolved in Spirit of Wine.

6. I then boiled another Piece of *A* in capital Soap-Lees, that is, Soap-Lees of a due Strength for making Soap with: It was totally diſſolved in half an Hour, it being, during the boiling, ſurrounded with a Froth of Air-Bubbles, which inceſſantly aroſe from it, a ſign that it was in a diſſolving State.

7. I boiled alſo with *A* a Piece of the very hard Stone *B*, for an Hour's continuance; the Surface of which was thereby reduced to a ſtiff Mud, to ſome depth, and the inner Part was rotten and friable.

8. Another Piece of *A* being boiled for an Hour in a Lee of the ſame Pot-aſh that the Soap-lees were made of, and of an equal Strength, it had no Effect in diſſolving it.

9. Now Soap-lees, which boiled up with Oil, or Fat, or both, make Soap, differ only in this reſpect from a Lee of Pot-aſhes, *viz.* that in making the Soap-lees, there is quick Lime added to the Pot-aſh, on which Water is poured, after they have ſtood to ſlacken together for ſome Time; The lixivious Salts of the Pot-aſh, and fiery Particles of the quick Lime, being by this means moſt intimately combined, make the Liquor called Soap-lees, which is of ſo exceeding corroſive and cauſtick a Nature, that it will not only inſtantly deſtroy any animal Subſtance which is thrown into it while boiling, but will alſo corrode Copper, Braſs and Iron; which, its corroſive Quality is greatly checked and ſheathed, by being mixed and incorporated with Oil in the making of Soap.

10. The Virtue and Efficacy of the ſoapy Part of the Medicine lies therefore in the Energy which the fiery Particles of the Lime give to the lixivious Salts of the Pot-aſh, whereby they acquire a Power of penetrating and intimately mixing with Oils, which are a principal Band of Union of ſolid Bodies, and thereby diſſolve them. And this is probably done, by giving an erect lancinating *Polarity* to the lixivious Salts, in the ſame manner as the Heat of Fire is ſuppoſed to form the moſt corroſive acid Spirits, and as a Loadſtone makes Filings of Iron erect themſelves into briſtle-like Spires. And thus we may obſerve, that even great Degrees of Cold give a like *Polarity* to Water, which in hoar Froſts is alſo form'd into ſuch ſharp lancinating *Spiculæ*;

which are ſo much the longer and larger, the more intenſe the Froſt is, provided there be ſufficient Moiſture in the Air to ſupply them with Water. And did not the Froſt on Graſs immediately diſſolve into a liquid Water, when warm, it would, by its ſharp Points, be as deſtructive a Poiſon as *Arſenick*, to the Animals which eat it.

11. I have long ſuſpected that the expanſive Force of Water when frozen into Ice, is not owing, as has been conjectured, to the wedging in of nitrous Particles; but rather to the greater Space which the watery Particles take up, when by the Energy of Cold they are ranged into ſuch new Combinations, as make them ſhoot into ſolid oblong Cryſtals, ſuch as may be obſerved when the Surface of Water firſt begins to turn hard by freezing, as well as when round Drops of Dew are thereby formed into briſtly Spires; in which ſolid Shape, the Sum of the Size of their ſolid Maſs is larger than when in a liquid Form. That nitrous Salts are not neceſſary to make Water condenſe into Ice, is evident from the Shell of Ice about three Fourths of an Inch thick in the Bomb, where no nitrous Salts could enter, and yet the freezing Water in the Bomb expanded with ſo abſolute a Force as to burſt the Bomb. See my *Statical Eſſays*, Vol. II. p. 349. Another probable Argument that no nitrous Salts do enter Water in freezing, is, that Ice is ſpecifically lighter than Water; whereas a Mixture of Nitre, which is ſpecifically heavier than Water, ſhould

cauſe the Ice to ſink, and not to ſwim; and if Nitre has no ſhare in it, then the Power that gives the *Polarity* to the Particles of freezing Water muſt be very great, ſince in freezing it expands with a Force ſufficient to burſt the ſtrongeſt containing Veſſel in which it happens to be confined, were it a Bomb or a Cannon. And this no wonder, when we conſider that there are many other Inſtances in Nature of a prodigious Force, cauſed by the ſtrong Attraction of *Cohesion*, with which the minuter Particles of Matter are acted on. Thus, for Inſtance, the Particles of Water are imbibed and attracted ſo ſtrongly into the Pores and Sap-veſſels of Wood, as to make it expand with a Force ſufficient to ſplit Mill-ſtones from the ſolid Rocks, being drove when very dry into Holes cut in a proper manner, and then wetted. And as the watery Particles are thus forcibly acted on by an attractive Force; ſo are they, on the contrary, when heated to a certain Degree, thereby acted on with an immenſe expanſive Force, vaſtly ſuperior to that of kindled expanding Gun-powder.

12. And perhaps the irregular Figures of ſome Stones in the Bladder are in part owing to a kind of *Polarity* in the concreting Particles; which Property of Matter has probably a very extenſive Influence in the Formation of many natural Bodies.

II.

13. I tried alſo what Effect Soap-lees would have on Stones, in the digeſting Warmth of a Cucumber Bed; where I found a Piece of the

Stone *A* to be diſſolved in four Hours, ſo as to make with the Soap-lees a turbid Milk-like Liquor. And a Piece of the Stone *B*, tho' not totally diſſolved, was become ſo rotten and friable, as to be broken into ſeveral Pieces, after ſtanding ſeven Days in the ſame Warmth.

14. Hence we find that Soap-lees prove to be the moſt powerful Diſſolvent of the *Calculus*, that is known, excepting only Spirit of Nitre; and the greater the Warmth, the ſooner it diſſolves. Thus Pieces of the *Calculus A*, were diſſolved in boiling in Soap-lees in half an Hour, in a hot Cucumber-Bed in four Hours, in a leſs hot one in eighteen Hours, in cold Soap-lees in three Days.

15. Hence we may obſerve alſo, that the ſame *Menſtruum* diſſolves Stones of a different Texture in a different manner; ſome by making them ſoft, others by rotting and ſplitting them into Fragments; in both which Forms they have been frequently obſerved to be voided by Mrs. *Stephens*'s Patients: A probable Argument in favour of the Efficacy of the Medicines. And perhaps farther Experience may teach us, how to give a Gueſs at the Nature and Kind of ſome of the Stones in the Bladder, *viz.* by comparing what comes away by the Efficacy of the Medicines, with ſome of the ſeveral kinds of Solutions of Stones that are made with Soap-lees out of the human Body.

16. Which Solutions, both in and out of the Body, are probably cauſed by taking out the animal Oil which is the Band of Union of the Stones, in the ſame manner as the whiting of Linnen is

performed, by taking out of it the vegetable Oil. And as Linnen, by being thus deprived of its Oil, is rendered whiter, but has withal its Strength in ſome meaſure impaired; ſo the *Calculus*, in diſſolving, generally turns white, whatever be the *Menſtruum*. There is however this Difference, that whereas the vegetable Oil yields to the fixed alcaline Salt of Pot-aſh alone, the animal Oil, in order to be extracted, requires the united Force of Lime and Pot-aſh.

III.

17. It is well known that Mrs. *Stephens*'s Patients void great Quantities of calcarious Matter for a conſiderable Part of the Time that they take her Medicines, and that to ſuch a Degree, as made it to be much ſuſpected by many, that what was voided was nothing but the calcarious Matter of the Medicines: And, in order to diſtinguiſh whether it were ſo or no, Dr. *Hartley* and I put into ſeveral new Tobacco-Pipes, ſome Pieces of true *Calculus*, ſome Scales and Fragments, voided by a Patient of Mrs. *Stephens*'s, and a white calcarious Matter, which had been collected and dryed to a hard Conſiſtence, from the Sediment of the Urine of another of her Patients, who voided much of it. There were twelve Grains of this laſt mentioned, which after having been half an Hour in a red-hot Tobacco-Pipe, was reduced to ſeven Grains; which ſeven Grains may reaſonably be thought to be the *Calx* of the Medicines, for Lime is not volatile in the Fire. But the above men-

tioned true *Calculus*, as alſo the Fragments voided by her Patients, proved all volatile, almoſt nothing remaining in the Pipes after ſo long burning; which is agreeable to the known Property of the true *Calculus*. By this means therefore we may diſtinguiſh whether the Matter voided be a true calculous Matter, or a mere *Calx* of the Medicine.

18. In order to make ſome Eſtimate of the Quantity of *Calx* or Lime, there is incorporated with the lixivious Salt of the Pot-aſh in making of Soap-lees, I made the following Experiments, *viz.* I evaporated away to Dryneſs four Ounces of capital Soap-lees, the remaining dry Salt of which being the *Lapis infernalis*, or common *Cauſtick* of the Surgeons, weighed 399 Grains; or half an Ounce, and 180 Grains, which is $\frac{1}{4,3}$d Part of the Soap-lees. But I have found in a like Quantity of capital Soap-lees, which I bought of another Soap-boiler, but 320 Grains of Salt, which is $\frac{1}{5}$th Part leſs. (And in another Parcel which Dr. *Hartley* procured of the uſual middle ſtrength for the Purpoſe of making Soap, he found the Salt only $\frac{1}{5,5}$th Part; the ſpecifick Gravity of this to common Water was nearly as 7 to 6.) I then poured on this laſt Salt ſome hot Water, and filtrated the *Lixivium* thro' Paper; there remained in the filtring Paper eleven Grains, of a dry inſipid *Calx*, which did not grow moiſt, not in long ſtanding expoſed to the open Air: a ſign that no lixivious Salt remained in it, for it was waſhed with repeated Quantities of freſh warm Water.

This inſipid *Calx* was $\frac{1}{29}$th Part of the above mentioned dry Salt Sediment.

19. I then evaporated away again this filtrated Soap-lees, when the remaining dry Salt weighed 307 Grains, which is 13 Grains, or $\frac{1}{28}$th part leſs than before. I then poured hot Water on this Salt, and filtrated it, as before, when the remaining dry *Calx* in the filtring Paper weighed ſeven Grains, *viz.* nearly $\frac{1}{44}$th part of the dry Salt.

20. I alſo evaporated it away a third Time, when the dry Salt weighed 236 Grains, that is 71 Grains, or $\frac{1}{4,2}$ leſs than on the foregoing Evaporation: On pouring hot Water on it, and filtrating it through Paper, the inſipid dry *Calx* weighed two Grains, *viz.* $\frac{1}{118}$th Part. Whence we ſee it is now diveſted of its Lime; for a Lee made of the ſame Pot-aſh that the Soap-lees were made of, and in which there was no Lime, yielded on Evaporation this Quantity of Sediment, as ſuch Lixiviums conſtantly do, tho' evaporated and filtrated never ſo often; and this *Reſiduum* will be ſomewhat more or leſs, according to the different Degrees of Heat that are applied in the Evaporation.

21. It had alſo loſt its Power of diſſolving the *Calculus*, as I found by the following Experiments: *viz.* I evaporated to Dryneſs, and filtrated another Quantity of the above mentioned ſtronger Soap-lees; and then took care to pour no more hot Water on the dry Salt, than had been evaporated away from it; whereby regard was had to keep up a due ſtrength of the Soap-lees,

which was alſo adjuſted with great Accuracy by means of an *Hydrometer*. Which Soap-lees diſſolved the pieces of *Calculus* put into them, notwithſtanding they had been thus deprived of ſome of their limy Matter: and they retained a Power of diſſolving, after they had been thus deprived of more of their limy Matter a ſecond time. But when I repeated the Evaporation and Filtration a third time, they were ſo thoroughly purified from the Lime, that they had no more Effect in diſſolving a Piece of the *Calculus A* than Lee of Pot-aſhes, neither in a warm digeſting Heat, nor in boiling for half an Hour; but after ſtanding many Days in theſe Soap-lees, its ſurface was a little ſoftened.

22. Hence we ſee that theſe ſtronger Soap-lees did not loſe their diſſolving Power, till after three Evaporations, whereas the weaker Soap-lees, did probably loſe their diſſolving Power by two Evaporations; for on the third Evaporation, Numb. 20. no more than two Grains of *Calx* remained, *viz.* no more than is found in a Lee of the ſame Pot-aſh, and conſequently they muſt have been deprived of their diſſolving Power; and it is obſervable that Soap-lees thus treated, are become leſs purgent, and more mild to the Taſte.

23. And that this Loſs of a diſſolving Power in Soap-lees, was not owing to any Virtue of them that flew off in Evaporation, I found, by diſtilling ſome Soap-lees, when, what came over into the Receiver, was a pure taſteleſs Water, which had no diſſolving Power; ſo that when a quantity of Soap-lees has loſt its diſſolving Power by two or

three Evaporations and Filtrations, this is not owing to any thing that flies off in Evaporation. Nor is it owing to the taking away each time by the Filter, their calcarious Matter. For to be aſcertained of this, I evaporated a quantity of Soap-lees to Dryneſs thrice without Filtration; yet notwithſtanding the *Calx* remained in them, they had loſt much of their cauſtick Pungency, and with it, their diſſolving Power: which muſt therefore be occaſioned by a Change of the Texture and Union of the limy Particles and lixivious Salts, whereby they are deprived of their lancinating *Polarity*; which Effect is probably produced by the Affuſion of freſh Water, and not barely by drying; becauſe when firſt dryed they are a ſtrong Cauſtick.

24. I dropped into two Ounces of Soap-lees ſome Oil of Vitriol, till they were ſaturated therewith, ſo as to efferveſce no more, by which means the limy Particles of the Soap-lees were precipitated to the Bottom; which being well waſhed by repeated Lotions, and then dryed, there remained 20 Grains of cryſtallized Salt, like what is called *Glauber*'s wonderful Salt. I put a piece of the *Calculus A* into the Soap-lees, thus deprived of their Lime, and made a neutral Salt; but they had no Effect in diſſolving it, neither in a digeſting Heat, nor in the Heat of boiling Water.

25. I obſerv'd, that whenever I evaporated thus to Dryneſs the Salt of Soap-lees, in the Bottoms of *Florence* Flaſks ſet in Pipkins with Sand, that the Salt turned very green, which made me ſuſpect, that this Greenneſs was owing to the

Verdegreaſe of Copper Veſſels in which they might have been prepared: But I found on Inquiry of the Soap-boilers, that they prepare the Soap-lees in well tarraſſed Ciſterns, and not in Copper Veſſels. Yet the Salt of the ſame Pot-aſh as the Soap-lees were made of, did not turn green, tho' it had the ſame Degree of Heat given it. Dr. *Boerhaave* ſays, that in *Muſcovy*, whence much of our Pot-aſh comes, they boil it in Copper Veſſels; and if the Pot-aſh does thence contract any Verdegreaſe, the Lime in the Soap-lees may make it give its Colour better, as Salts heighten Colour in dying. *Chymiſts* obſerve, that theſe kind of fixed alcaline Salts do in burning turn aſh-coloured, then white, blue, green, brown, and reddiſh ſucceſſively.

26. We ſee in theſe Experiments, what a quantity of Lime there is incorporated into Soap-lees, which yet are as clear as fair Water; and this with the Lime of the Egg-ſhells taken in ſubſtance, is a ſufficient Fund to ſupply, that quantity of calcarious Matter which is voided by Mrs. *Stephens*'s Patients, together with Sand, Gravel, Scales, and diſſolving parts of Stones.

27. The learned Chymiſt Monſ. *Geoffroy*, in a Memoir which he ſent to Dr. *Hartley*, obſerves, "That the Pot-aſh that is made of the Aſhes of in-
" land Plants or Trees, is found to be more corro-
" ſive, than the Pot-aſh that is made of Sea-plants,
" which have ſome Mixture of Sea-ſalt in them:
" of which latter Plants, he ſays *Alicant* Soap is
" made, *viz.* either of Salt of *Kali* or *Levant*

" Aſhes, in this Proportion, *viz.* in 180 Pounds " of Soap, there are 50 Pounds of Salt of *Kali*, " 115 Pounds of Oil of Olives, and 15 Pounds " of a watery Humidity. By pouring a vitriolick " Acid into two Ounces of a Decoction of this " Soap, he obtained one Ounce, three Drachms, " and twenty Grains of Oil of Olives." Which agrees with an Experiment made by Dr. *Hartley* to the ſame Purpoſe.

28. We may obſerve the Analogy there is between the Event of ſome of theſe Experiments, and the Effect which Mrs. *Stephens*'s Medicines have on her Patients, *viz.* that notwithſtanding theſe Soap-lees, by drying their Salts, Numb. 18, 19, 20, and then diſſolving them again with Water, and by Filtration, had been deprived of a conſiderable quantity of their limy calcarious Matter, and had the Texture of their Parts broken, yet they ſtill retained Virtue enough to give them a Power diſſolvent of the Stone; which yet a Lee of the ſame Pot-aſh, as the Soap-lees were made of, will not do, ſee Numb. 8. And it is the ſame with Mrs. *Stephens*'s Medicines, which are found, by the happy Effects of them, to retain a diſſolving Power, notwithſtanding the intimate Union between the Lime and alcaline Salt, muſt be probably in ſome meaſure broke, by their paſſing through the Body.

29. Now ſince there is ſo much Lime in Soap-lees, and Mrs. *Stephens*'s Powder, it may well be aſked, whence is it that Mrs. *Stephens*'s Patients do not always void calcarious Matter, while they

are taking the Medicines? Perhaps it may be; that while the Stones in the Bladder are in a diſſolving ſtate, the diſſolving Matter of them combining with the *Calx* of the Soap-lees and Egg-ſhells, may make too plentiful and groſs a Combination of Matter to be ſuſtained in the Urine, conſiſtent with its Tranſparency: But when no Sand or diſſolving Parts of Stones, or mucous Matter of the urinary Paſſages come away, then the Urine may retain its Clearneſs, and depoſite little Sediment, notwithſtanding the Lime of the Medicines is in it, as do the Soap-lees themſelves. For the Urine, which is often clear when firſt made, and while warm, will yet ſometimes be ſo ſurcharged with feculent Matter, as to grow turbid when it cools, and depoſite a conſiderable quantity of Sediment; as is alſo the known caſe of ſeveral other Liquors. But the further clearing up of this Matter muſt be left to future Experience, ſince we do not yet certainly know in what Caſes the Urine is turbid or clear during the Uſe of the Medicines.

IV.

30. Monſ. *Geoffroy*, in the before mentioned Memoir, ſays, "That in analyſing two Ounces "Troy of *Alicant* Soap, which is a principal In-"gredient in the Medicines, he found that there "were two Drachms and 48 Grains of lixivious "Salt;" which Experiment agrees nearly with one made by Dr. *Hartley* to the ſame Purpoſe. So that when a Perſon takes three half Pints of

a Decoction of Soap in a Day, in which there are two Ounces and four Drachms *avoirdupoiſe* of Soap, he takes about ſix Drachms *avoirdupoiſe* of a lixivious Salt.

31. Now having found above Numb. 18, that there are 399 Grains of lixivious Salt in four Ounces *Avoirdupoiſe*, or 1752 Grains weight of the ſtrongeſt capital Soap-lees; therefore as 399 is to 1752, ſo are 164, or ſix Drachms of Salt to 720 Grains weight, or 1 Ounce, 10 Drachms, 12 Grains of Soap-lees, there being 54, 75 Grains in two Drachms *Avoirdupoiſe*, which weight Mrs. *Stephens* made uſe of. And in order to find the Number of Drops there are in any determinate Quantity of Soap-lees, I choſe three Two-Ounce Vials, whoſe Lips were of different thickneſſes; the thinneſt, as thick as a Shilling, the thickeſt was the double of that; and found that 194 Drops from the thinneſt Vial weighed ſixty Grains; and that 116 Drops from the thickeſt weighed as much; but from the Vial of a middle thickneſs 150 Drops weighed ſixty Grains, the Drops being conſiderably leſs or larger, according to the thinneſs or thickneſs of the Body which they drop from; a Circumſtance which well deſerves to be attended to, when only a few drops of a very deleterious Medicine are given in a doſe.

32. Suppoſing therefore that 150 Drops, do at a Medium weigh ſixty Grains, (for I made uſe of drops of this ſize in the following Experiments) hence as 60 is to 150, ſo are 720 Grains weight of Soap-lees to 1800 drops therein contained;

ſo that thoſe who take two Ounces and two Drachms of Soap in Mrs. *Stephens*'s Medicines daily, take the alcaline Salts of 1800 drops of Soap-lees. Mr. *Sharp* the Surgeon gave *Appleton* the Coalman daily two and a half Ounces of Soap, wherewith a large Stone in his Bladder was diſſolved, which is one ninth part more of the Soap, which will therefore be equal to the Salts of 2000 drops of Soap-lees.

33. But if we make the Eſtimate from the above mentioned weaker Soap-lees, Numb. 18. which contain but 320 Grains of Salt in four Ounces, then as 320 is to 1752, ſo is 164 to 897 Grains, or two Ounces 21 Grains. Hence as 60 is to 150, ſo is 897 to 2242 drops therein contained.

V.

34. Since a principal part of the Efficacy of the Medicine is found to lie in the Soap-lees, it was requiſite to find by proper Experiments, what Proportion of them would give the Urine, inſtead of a Stone generating, a diſſolving quality. And in order to it, I cut twenty-ſeven pieces out of the above mentioned Stone *A*, which weighed ſeverally from 3 to 14 Grains, and having put them into ſo many two Ounce Vials, which were mark'd with Labels paſted on them; I put into each Vial an Ounce of cold Urine, and then dropped into each Vial, from one to twenty-ſix drops of capital Soap-lees, according to the Number of each Vial reſpectively; and this was repeated every Morning with freſh Urine of the Night paſt.

35. And in order to keep them in a conſtant warm digeſting Heat, nearly equal to that of Urine in the Bladder; I placed them in an Iron Pot, which was half full of Sand, with a Cover to it. This Pot was hung all the day on the Iron Crane, not over, but ſo near the Kitchen fire, as to keep it of a due degree of warmth; the Pot being ſome times turned ſide for ſide to warm it equally all over. At night the Pot was ſet over a Lamp, on a Stove in the Chimney-corner, being covered with a Tub turned bottom upwards; yet ſo as to leave room for a ſufficient draught of Air, both below, and alſo through a large hole in the upper part of it. By this means there was a conſtant due degree of Heat kept up, with very little Trouble or Expence; this is therefore a very commodious Method for ſuch purpoſes.

36. After I had continued theſe pieces of *Calculus* thus in warm Urine and Soap-lees, night and day for ſixteen days, I found that all the pieces, which had above ſixteen drops of Soap-lees in the Urine, were ſoft and white, to a conſiderable depth from their ſurfaces, and in thirteen days more, they were, ſome totally diſſolved, others, all but a ſmall rotten Piece in the Centre.

37. At the End of thirty-nine days, I layed the remaining ſixteen to dry on a ſhelf for four days, and then weighing them, I found that thoſe with only one and two drops, had neither increaſed nor decreaſed in weight; whereas a piece layed in Urine only in the 27th Vial, had increaſed from 10 to 12 Grains. And it was very obſervable

that this laſt mentioned piece was covered with ſmall ſhining Salts, eſpecially on the convex harder Surface, which was part of the Surface of the great Stone *A*, they were cryſtallized like Spar. There were many of them alſo on the Pieces, one, and two, but not ſo many nor ſo large as the other. There were very few on the other Numbers, and thoſe ſo ſmall as to be ſeen only with a Microſcope; but there were the fewer of them, the more they were in a diſſolving ſtate, and a few of them alſo might be ſeen on the large *Calculus A*, whence they were all cut.

38. Numb. 3. was waſted one Grain, *viz.* one ſixth part; hence we may with pleaſure obſerve, how very ſmall a Proportion of Soap-lees, *viz.* a quantity equal to but $\frac{1}{400}$th part of the Ounce of Urine, checks and deſtroys the Stone-generating quality of the Urine, and gives it even a ſmall degree of a diſſolving Power. Numb. 4, was quite rotted, being a ſoft piece, for there was a conſiderable difference in the Degrees of Hardneſs of the ſeveral parts of the large *Calculus A*, it being hardeſt near to the Surface. Numb. 5. loſt 3 Grains in 7. Numb. 6. two Grains in ſix. Numb. 7. $1 + \frac{3}{4}$ in $4 + \frac{1}{2}$. Numb. 8. $3 + \frac{1}{2}$. out of 12. Numb. 9. four in ſix. Numb. 10. $2 + \frac{1}{2}$ out of 13. Numb. 11. two in five. Numb. 12. three in twelve. Numb. 13. two out of $6 + \frac{1}{2}$. Numb. 14. $2 + \frac{1}{2}$ out of 8. Numb. 15. $4 + \frac{1}{2}$ out of 11. Numb. 16. four out of 14.

39. Theſe were all very hard when dry, as was alſo the white cruſt on them. It was obſervable

that theſe pieces which were all cut into Parallelopipeds, with Edges and Angles, had the Edges and Angles, of thoſe which were waſted in any conſiderable degree, all waſted and diſſolved, *viz.* becauſe the Liquor could the moſt eaſily come at them on each ſide. I then ſet them all a digeſting again, as before; for thirteen days, but they were very little waſted in that time; which was occaſioned, as I believe, by their being dryed, whereby they were covered with a hard caſe of the Lime of the Soap-lees, which was intermixed with what was in the firſt Digeſtions in a ſoft white diſſolved ſtate; and it was ſome little diſadvantage to theſe Solutions, that cold Urine was poured every morning into the Vials, which in ſome degree checked the Solution of the pieces of Stone: for ſudden Changes from warm to cold, tend to harden them, as I have ſhown in my Treatiſe on the animal *Calculus.*

40. As many of theſe pieces had ſome degree of Rottenneſs in ten days, ſo the Fragments and Pieces voided by ſome of Mrs. *Stephens*'s Patients, as well as ſome larger Stones, cut out of Perſons who had taken her Medicines for a conſiderable time, were remarkably rotten; which was particularly the caſe of a very large oblong Piece which was lately voided by Dr. *Hartley*, it weighed 17 Grains before it was dry, and 12 + $\frac{1}{2}$ when dry. And as notwithſtanding this ſo early Rottenneſs, many of them were long before they were diſſolved to ſuch a degree, as to be ſmall enough to put off with the Urine; ſo we find it the ſame in theſe

15 Pieces: For when they had acquired ſome degree of Rottenneſs, the *Nucleus's* of them, did not grow ſenſibly more and more rotten, in proportion as they continued longer a digeſting in Urine and Soap-lees, notwithſtanding the ſurfaces of them were covered with a ſoft white Pap, into which they were continually diſſolving: which looks, as in the caſe of many other Solvents, as if the white Pap prevented the free Entrance of the medicated Urine; but when by the contracting of the Bladder this ſoft Pap is rubbed off, then 'tis probable, that the medicated Urine of Mrs. *Stephens*'s Patients can better come at the *Nucleus* or undiſſolved Part.

41. I obſerv'd that when I poured off the Urine out of the Vials, every morning, there was a calcarious Sediment in it, more or leſs, in proportion to the quantity of the Soap-lees. There was very little of it with three drops of Soap-lees to an ounce of Urine, but a conſiderable quantity with ſix drops. When I put ten drops of Soap-lees into an ounce of Urine only, without any *Calculus* in it, there was the ſame ſoft white cloudy Matter. Hence it is evident that the calcarious Matter voided by Mrs. *Stephens*'s Patients does not come only from the diſſolving *Calculus's*, and her limy Powder; but alſo in great part from the Soap-lees.

VI.

42. But notwithſtanding there is ſo much calcarious Matter in Soap-lees and the Powder, yet

it is obſerved, that thoſe who take the Medicines, do not void any ſenſible quantity of it, till after they have taken it for ſome days; which probably ariſes from hence, *viz.* that whereas the Sum of the Blood and other Humours of the Body, is much greater than 78 ounces, the quantity which at a Medium, is taken in and goes out of the Body every twenty-four Hours, a proportionable Rate of the lixivious Salts, muſt firſt be ſpent in duly and equally impregnating theſe; before a quantity of thoſe Salts, nearly equal to what is taken in, can alſo be carried off, by Urine and other Evacuations; and this muſt take up ſome days: ſo accordingly it is uſually three or four days from the firſt taking of the Medicines, before this calcarious Matter is obſerved to come away in plenty. The ſtimulating Pains in the Bladder, come on alſo about the ſame time, for the ſame Reaſon. And there are doubtleſs ſeveral other Medicines, which require the Repetition of them for ſome time, before they can for the ſame Reaſon operate with their full Efficacy. *Quære,* Is not the Reaſon why ſtimulating things act moſt ſenſibly on the Neck of the Bladder owing to theſe Cauſes, *viz.* That all the Urine that paſſes thro' the innumerable Emunctories of the Kidneys, and thro' both Ureters, paſſes alſo thro' the narrow Defilee at the Neck of the Bladder, and conſequently that Part is acted on and waſhed by a greater quantity of Urine than other Parts are: The Energy with which it acts is alſo much increaſed by the Force and Rapidity with which the

Urine is impelled in paſſing off, whereby that Part being moſt fretted and bar'd of its mucous Covering, is thereby more ſenſibly affected by ſtimulating Particles.

43. Now in order to make ſome Eſtimate, from the Event of theſe Experiments, of the quantity of Soap-lees that is requiſite, to be conveyed into the Bladder with the Urine, to make it a Diſſolvent: Let us ſuppoſe the quantity of Urine which is made in twenty-four hours, to be about thirty-nine ounces, as Dr. *James Keill*, in his *Medicina Statica Britannica*, p. 14. obſerved it to be. And ſuppoſing the quantity of Fluid that paſſes off the Body by Perſpiration and Reſpiration to be the ſame, as it is nearly equal in this northern Country, as I and others have found on Trial, then the whole quantity of Fluid, that enters either in a fluid or ſolid Form, and paſſes off from the Body every twenty-four Hours, will be ſeventy-eight ounces: a large Allowance. Now ſince we found in Numb. 32, that two ounces and two drachms of Soap, contain the alcaline Salts of 1800 drops of Soap-lees, theſe divided by 78, the number of ounces of fluid and ſolid matter that paſſes through a human Body in twenty-four hours, the Product 23, is the number of drops of Soap-lees, with the Salts of which each ounce of Urine in the Bladder is blended; this, ſuppoſing each of the 78 ounces of fluid, that paſs through the Body in twenty-four Hours to have an equal Share of theſe Salts; but it is generally agreed, that far the greateſt Proportion of Salts are carried off

by the Urine, eſpecially when Perſons do not uſe ſo much Exerciſe, as to make them ſweat, which carries off much Salt with it, for Sweat taſtes manifeſtly of Salt. And accordingly Mrs. *Stephens*'s Medicines are found to be the more effectual, when the Patients uſe little Exerciſe while they take 'em: on which account alſo they can more eaſily retain their Urine the longer, whereby it has more time to act on the Stone. And probably the Reaſon why *Calculus's* are found not to diſſolve ſo ſoon in the Kidneys as Bladder, is becauſe in the Bladder the *Calculus's* are almoſt continually inveſted with Urine, unleſs for a very little time after making Water; whereas the Flow of Urine in the Kidneys, tho' it be conſtant, yet is very unequal as to its quantities, being greateſt ſome time after drinking, and gradually decreaſing more and more, till freſh Drink is taken in; whence probably the *Calculus's* there may not be covered with Urine for ſo long Continuance as in the Bladder. Beſides, as her Patients are to drink but ſmall quantities of Liquids, the Urine will on that account be the more impregnated with lixivious Salts. Whence we may reaſonably conclude, that there are in each ounce of the Urine, of thoſe who daily take two ounces and two drachms of Soap, the alcaline Salts of conſiderably more than twenty-three drops of Soap-lees; which are, as we find by the foregoing Experiments, ſufficient to make the Urine a Diſſolvent of ſome *Calculus's*, even without the concurring Aſſiſtance of the Powder, which has alſo a conſiderable diſſolving

Power in it. Eſpecially when we reflect that in Numb. 38. ſo ſmall a quantity as three drops of Soap-lees to an ounce of Urine, was found not only to deprive it of its Stone-generating Quality, but alſo even to give it ſome degree of a diſſolving Power.

44. For whether we ſuppoſe the alcaline Salts when in the Urine, to be wholly diveſted of the Oil, in which they are ſheathed in the Compoſition of the Soap, or to be only in part ſo; yet in either caſe, they are ſufficient to make the Urine a Diſſolvent. For Mrs. *Stephens*'s Medicines, with the Egg-ſhells, as alſo the Soap without the Egg-ſhells, and the Lime of Egg-ſhells alone, diſſolved Pieces of the *Calculus A*, as well as Soap-lees. Numb. 49, 50, 54.

45. It is well known that the Urine of thoſe who take the Medicines is ſtrongly impregnated, with the alcaline Salt of Soap-lees, as is manifeſt by its fermenting with acid Spirits, which the Urine of other Perſons will not do in any Degree; as alſo from the Effect, which Dr. *Hartley*'s medicated Urine had in diſſolving ſeveral *Calculus's*. Monſ. *Geoffroy*, in the Memoir above-mentioned, in analyſing chymically the Urine of thoſe who took the Medicines, found in it alſo a conſiderable quantity of fix'd Salt, ſuch as is in Soap-lees; on which having poured ſome Oil of Vitriol, the ſame kind of neutral Salt, called *Glauber*'s Salt, was formed, as when poured on Soap-lees. A plain Proof that the alcaline lixivious Salt of the Soap-

lees, paſſes in plenty through the Blood into the Urine of thoſe who take the Medicines for ſome Time.

45. The very ſtimulating Pain, which thoſe feel who take the Medicines, is a farther Proof of the great quantity of alcaline Salt, that the Urine is impregnated with; which Pain gradually abates, after uſing the Medicines for ſome time. And the ſame has been obſerved by thoſe, who clean their Teeth with liquid Soap, *viz.* that at firſt uſing it ſtings the Gums a little, but not at all after a few times uſing. And the Waſher-women who waſh Linnen for Whitſters, find the ſame Inconvenience to their Hands at firſt, which afterwards proves none at all, notwithſtanding they waſh inceſſantly with great quantities of ſtrong Soap for ſeven or eight months Continuance.

VII.

46. As the diſſolving Power of Soap-lees is not deſtroyed by being boiled up, in the making of Soap, with ſo unctuous a thing as Oil is, no wonder that in being blended with, and paſſing thro' the Blood, a leſs unctuous Fluid, it ſhould not be deprived of this its Virtue. Were the Blood an acid Fluid, it would moſt effectually deſtroy its diſſolving Power; but it is well known that healthy Blood tends rather to the alcaline than to an acid Diſpoſition.

47. It muſt be owned, that theſe Experiments, which ſhow what Proportion of Soap-lees to Urine, make it a Diſſolvent, would of themſelves

give but little hope, that we had thereby hit on a Diſſolvent for the Stone; becauſe it might with good Reaſon be objected, that notwithſtanding the Urine was thus made a Diſſolvent, by dropping ſome Soap-lees into it; yet theſe Soap-lees when taken down into the Stomach as a Medicine, might probably undergo ſo great an Alteration, in paſſing thro' the ſeveral Digeſtions, and Blood and Humours of the Body, as to ſpoil their Efficacy. But on the other hand, when to the Event of theſe Experiments, we add the concurring Evidence of the happy Effects, which the Medicines have had, in making the Urine of thoſe who take them inwardly alſo a Diſſolvent both in and out of the Bladder, then the concurring Teſtimony of both Methods of Trial, agreeing in the ſame happy Event, corroborate each other's Evidence, even to the degree of a full Demonſtration.

48. Had not therefore happy Experience prov'd it, we could not have concluded, becauſe Soap and Lime were found to be Diſſolvents of the *Calculus* out of the Body, that therefore they would diſſolve it when taken into the Body. For it is well known that ſome common Waters will diſſolve ſeveral *Calculus's* out of the Body, which yet is ſo far from being a Diſſolvent when drank, that there are many Inſtances of Perſons, who, tho' they drank no other Liquor than fair Water, had Stones in their Kidneys and Bladders.

VIII.

49. A Piece of the *Calculus A* weighing 10 + ½ Grains, was diſſolved in a Decoction of *Alicant* Soap, mixed with calcined Egg-ſhells, in fifteen Days in a digeſting Warmth, it being all turned to a ſoft white Pap, excepting a ſmall *Nucleus* which was rotten.

50. Another Piece which weighed eight Grains, was alſo at the ſame time, diſſolved in a Decoction of *Alicant* Soap, without the Egg-ſhell Lime.

51. Having thus found that Soap diſſolved the *Calculus*, I was deſirous to try what Proportion of it, would make the Urine a Diſſolvent, but I was ſoon diſappointed in this Reſearch; for the Soap would not diſſolve in Urine, neither in a digeſting Warmth, nor in two hours and half boiling. The *Calculus* was indeed become very rotten with ſo long boiling, but not more rotten than a Piece which was boiled in Urine only. So that ſince Soap does not diſſolve well in Urine, we may hence reaſonably infer, that the Soap-lees which are intimately mixed with the Urine in the Bladder are in a good meaſure diveſted of the oily part of the Soap.

52. I put a Piece of *A* into liquid Soap, which tho' it ſtood many days in a digeſting Warmth, yet had no ſenſible Effect on the Stone.

53. I put alſo a Piece of the ſame *Calculus A* into Water and Egg-ſhells calcined and ſlackened according to Mrs. *Stephens*'s Receipt; and let it

ſtand forty days in a digeſting Heat, yet it had no ſenſible Effect in diſſolving the Stone.

54. But a Lime-Water made of ſome of the ſame calcined Egg-ſhells, in the proportion of one part of Lime to twelve of Water, and when clear decanted off, according to the Direction of the *London Diſpenſatory*, had a very ſenſible Effect, in five days, in diſſolving a like Piece of the Stone *A*: And I found it the ſame when repeated with a Lime-water of a like Egg-ſhell Lime-powder, which was made by Mrs. *Stephens* herſelf, and which was of a middle Strength. Hence we ſee that the Lime-powder, by ſurrounding and covering the Stone in the other Caſe, prevented its Solution; which Dr. *Hartley* alſo obſerved, *vid. A View of the preſent Evidence*, &c. p. 157. Yet another Piece of the ſame Stone, was in three days, in a manner totally rotted and diſſolved, when laid in Water into which a freſh-made Lime of Egg-ſhells was put while hot from a Blackſmith's Fire, where it had been calcined for an hour and half, the diſſolving Power being ſo great, as to take Effect, notwithſtanding the Stone was covered with the Lime. I found alſo that a Lime-water made of this new-made Lime diſſolved much more powerfully, than that which was made of a Lime, which had ſtood to ſlacken for two Months, according to Mrs. *Stephens*'s Receipt.

55. When I repeated the ſame Experiments with Lime-waters made of common Chalk, the Pieces of the *Calculus A* were much diſſolved and very rotten to the Centre in ſix days. But no viſible

ſible Impreſſion was made thereby, on Pieces of the very hard mulberry Stone *B*, not even when the Lime-water was of a double Strength.

56. Hence we ſee that Lime-water is a moſt powerful Diſſolvent, except of ſuch very hard ones as this mulberry Stone; as alſo, that the freſher the Lime is from the Fire, ſo much the greater Energy it has, as I found in theſe Trials.

57. But it has been obſerved, that the Lime-water which is made of Lime which is brought to *London*, is not near ſo ſtrong, as the Lime-water which is made in ſeveral Country Places. I am apt to think that Lime made of Egg-ſhells or Cockle-ſhells, as being animal Subſtances, are purer and more homogeneous, than Lime made of Chalk or other Lime-ſtones.

58. I am informed that Lime-water is preſcribed to be taken inwardly in conſiderable quantities: And ſince it can be drank with Safety in ſuch quantities, it ſeems not improbable, that ſo powerful a Diſſolvent, may have a conſiderable Effect on ſome Stones in the Bladder: For it is not improbable that the Lime in Lime-water ſhould retain ſome of its Efficacy, when arrived at the Bladder, as well as the Lime in Soap-lees does.

59. Lime-water may alſo be made more or leſs ſtrong, as well as be taken in greater or leſs quantities, either with or without Soap, as Experience ſhall ſhow to be beſt. And the Soap may alſo probably be given in leſs quantities when conveyed in ſo powerfully a diſſolving Vehicle as Lime-water is, which would ſomewhat abate the Nauſe-

ouſneſs of the Medicine. I find that boiling Lime-water by itſelf, for ſuch a time as is ſufficient to make a Decoction of Soap with it, does not deſtroy its diſſolving Power.

60. And as Soap is deterging and relaxing, and Lime-water on the contrary of a drying aſtringent quality, they may on this account be variouſly combined, ſo as to check the Exceſs of either quality in them, and that without, in the leaſt rebating or weakening their diſſolving Power, which they both have in a great degree.

61. The ancient Chymiſts found Quick-lime to be a Diſſolvent of the Stone, and made ſeveral Preparations of it for that purpoſe; but yet failed of making it of uſe, in diſſolving Stones in the Bladder, for want of knowing how to convey a ſufficient quantity of it thither, with ſafety to the Patient, which Mrs. *Stephens* has happily hit on the means to do.

62. *Nicaſius le Febure, Profeſſor in Chymiſtry and Apothecary to King* Charles *the Second's Houſhold*, ſpeaking in his *Body of Chymiſtry*, Part II. p. 116. of the Virtues of a Preparation of Quick-lime, ſays, "That thoſe which ſhall uſe it, either for a " Remedy or for a Diſſolvent, may very well be " caſt into aſtoniſhment and wonder, that Nature " ſhould have hid ſo high a Myſtery, in ſo vile, " ſo contemptible a Subject as Quick-lime is; " which hath cauſed *Paracelſus* to ſay, by an Act " of Reflection and great Wonder, that ſome do " throw away and kick with their Feet, ſuch a " Stone or Flint, as would be to him a greater

" Revenue than a Cow, did he know the Myſte-
" ries which GOD and Nature hath concealed
" and laid therein."

63. It is well known that Egg-ſhells merely dryed and powdered, have been much given in Caſes of the Stone; but I do not find, that they have ever been burnt to a ſtrong Lime, before Mrs. *Stephens* made the Trial.

IX.

64. Tho' Soap-lees are ſuch powerful Diſſolvents, yet I could not find any diſſolving quality in Oil, the other Ingredient in the Compoſition of Soap.

65. When I dropped into three Vials, which had each half an Ounce of Linſeed-oil in them, ſeverally 12, 25, and 50 Drops of Soap-lees, if immediately after I put in Pieces of *Calculus*, they would in a few Days have their Surfaces diſſolved into a white Subſtance and become rotten: the Oil and Soap-lees being not in this Caſe as yet thoroughly incorporated, the Soap-lees ſeized and acted upon the *Calculus*. But if after the Oil and Soap-lees were mixed, they ſtood in a digeſting Warmth for twenty-four hours, before the *Calculus* was put in; then the Soap-lees being thereby more thoroughly incorporated with the Oil, the Mixtures had little Effect in diſſolving, not even with 300 or 400 drops of Soap-lees in half an Ounce of Oil. But notwithſtanding this Mixture has no diſſolving Power, yet the Oil may be a proper Vechicle to convey the Soap-lees into the

urinary Paſſages, ſince it is ſeparated from the Soap-lees in the Circulation. I am informed that ſeven hundred drops of Soap-lees have been given in a day, in an Emulſion made with good Salad-oil and ſoft Water; and that with ſome Succeſs.

66. Monſ. *Geoffroy* ſays, That he can make a liquid Soap with three Drachms of Salt of *Kali*; and one Ounce, four Drachms, and 45 and ½ Grains of Oil of Olives, which is not ſo nauſeous as *Alicant* Soap. But as this Salt would want the Energy, which Lime gives to the Salt of *Kali* or Pot-aſh in Soap-lees, ſo it is to be feared, it would be ineffectual. But if inſtead of the Salt of *Kali*, the dry Salt of Soap-lees, when firſt evaporated, were mixed with this quantity of Oil, it might probably have a diſſolving Power; and would then, if it ſhould prove leſs nauſeous than *Alicant* Soap, be preferable to it; but I fear it would retain its Nauſeouſneſs.

67. But whatever new Forms are contrived in order to improve the Medicine, it would be adviſable firſt to ſee, what Proportion of it, will make Urine a Diſſolvent out of the Bladder; then when given inwardly, to examine whether it makes the Urine of thoſe who take it, to ferment with acid Spirits, as alſo whether their Urine will diſſolve and abſorb the Incruſtations on the ſides of Urinals, &c. and diſſolve Stones laid in it, as Dr. *Hartley* found his would do; for whatever Medicine will make the Urine of one who takes it, a Diſſolvent out of the Bladder, will alſo make it a Diſſolvent in the Bladder. It was the

Force of this Evidence, which firſt induced me to entertain a good Opinion of the Efficacy of the Medicines, in a Diſtemper which I look'd upon, as the moſt to be deſpaired of for a Cure of any.

68. It is well known that ſeveral common Waters will diſſolve ſome *Calculus's*; yet tho' a Piece of the *Calculus A*, lay ten Weeks in a digeſting Warmth, in Rain-Water, there was no ſenſible Impreſſion made on it; an Argument the Stone, with which I made the greateſt Part of theſe Experiments, was none of the ſofter kind.

69. Concluding that the Efficacy of the Medicine lay principally in the Soap-lees and Lime of Egg-ſhells, I have not concerned myſelf, in examining the burnt Carrot-ſeeds, *&c.* which are of no avail. But the Honey is a good Detergent, tho' it does not ſeem to have any diſſolving Power.

70. I ſhall be glad if theſe Reſearches prove of any Service in this moſt important Concern. I make no doubt but that conſiderable Improvements will be made in theſe Medicines by Phyſicians, whoſe proper Province it is, and who are beſt qualified to find out the means, how to uſe, theſe Medicines with Safety, which have ſo ſtrong a cauſtick Quality. I have herein been only acting the part of a Naturaliſt, being excited thereto by the great Importance of the Subject, to the Welfare of Mankind; whom it has pleaſed GOD, by a ſurprizing Series of Incidents, to bleſs with the Diſcovery of a means to free themſelves from one of the moſt formidable and calamitous Diſtempers;

ſtempers; as alſo one that has hitherto been ſo abſolutely deſpaired of for a Cure, that many cannot yet be induced to have a good Opinion of it, notwithſtanding the full Evidences, that have in ſeveral Inſtances been given of its Efficacy.

A
SUPPLEMENT
TO A
PAMPHLET
INTITLED,

A View of the preſent Evidence for and againſt Mrs. STEPHENS'S *Medicines*, &c.

BEING

A COLLECTION of ſome Particulars relating to the Diſcovery of theſe *Medicines*, their *Publication*, *Uſe* and *Efficacy*.

By DAVID HARTLEY M. A. F. R. S.

A SUPPLEMENT, *&c.*

MRS. JOANNA STEPHENS is the Daughter of a Gentleman of a good Eſtate and Family in *Berkſhire*. About twenty Years ago ſhe accidentally met with a Receipt for the Stone, conſiſting of Egg-ſhells dryed in an Oven and powdered, which ſhe adminiſtred to ſeveral Perſons. After ſome Trials made with this ſhe began to burn the Egg-ſhells; and burnt them ſometimes to Blackneſs only, ſometimes till this Blackneſs was changed into a grey Colour, which approached ſo much the nearer to perfect Whiteneſs, as they were continued longer in the Fire, or its Heat more intenſe: Her Method at this time was to give of the Powder of Egg-ſhells thus burnt black or grey, as much as would lie upon a Shilling three times a-day; and it appeared to her that this Powder was more efficacious in proportion as the Egg-ſhells were more burnt. But finding that it often cauſed great Coſtiveneſs, ſhe added a ſmall quantity of Soap occaſionally to each Doſe, with a View both to prevent this Inconvenience, and alſo to forward the Diſſolution of the Stone. And thus ſhe continued giving the burnt Egg-ſhells with a ſmall quantity of Soap for ſeveral Years, curing gravelly Complaints thereby, by, and ſometimes diſſolving Stones in the Bladder. About 12 Years ago, ſhe gave her Powder in larger Dozes to one Mr. *Coxon*, adding thereto very frequently half an Ounce of Soap in Decoction. He had the Symptoms of a Stone in the Bladder, voided many Scales and Fragments during the Uſe of the Medicines, and received a more remarkable Cure than any Perſon before him had done. (See the *View of the Preſent Evidence*, &c. Caſe 101.) Upon this ſhe gave the Powder and Soap in ſtill greater Quantities, and found them attended with proportionably greater Succeſs.

In the Year 1735, the *Hon. Edward Carteret*, *Eſq*; *Poſt-maſter General*, began Mrs. *Stephens*'s Medicines, and received great Benefit from them. (See *Caſe* 100.) This engaged the Attention of the Public, and more particularly of ſuch as were afflicted with Gravel or Stone, ſo that the Number of Perſons that took them increaſed every day. In the Year 1737, the Cures performed by theſe Medicines were ſo many, and ſo well atteſted, that the ſpeedy Publication of them was judged to be of great Importance to Mankind. And accordingly in the Year 1738, a Propoſal for raiſing 5000 *l.* by Contribution, as a Reward to Mrs. *Stephens* for diſcovering her Medicines was made to the Public with her Conſent, the Conditions and Progreſs of which are related in the *View of the preſent Evidence*, &c. pag. 175. But as this Propoſal did not meet with Succeſs, ſhe was adviſed in the Beginning of the Year 1739 to apply to the Houſe of Commons

by

Petition for the above-mentioned Reward, ſubmitting her Medicines when diſcovered to ſuch Examination as the Houſe ſhould think fit, before the Payment of the Reward. This ſhe did, and a Bill was brought in for that purpoſe, which paſſed both Houſes, and had the Royal Aſſent at the Concluſion of the Seſſions *June* 14. She preſented a Paper containing her Method of preparing and giving her Medicines to his Grace the Archbiſhop of *Canterbury*, *June* 16. following. It was publiſhed in the *Gazette*, and Trials were made with the Medicines thus diſcovered. They were found to produce the promiſed Effects; the Truſtees named in the Act of Parliament met *March* 5. $17\frac{39}{40}$, gave Mrs. *Stephens* the Certificate required by that Act, and ſhe received the 5000 *l.* Reward at the *Exchequer March* 17. following.

An Act for providing a Reward to JOANNA STEPHENS, *upon a proper Diſcovery to be made by her, for the Uſe of the Publick, of the Medicines prepared by her for the Cure of the Stone.*

" WHereas *Joanna Stephens* of the City of
" *Weſtminſter*, Spinſter, hath acquired
" the Knowledge of Medicines, and the Skill of
" preparing them, which by a diſſolving Power
" ſeem capable of removing the Cauſe of the pain-
" ful Diſtemper of the Stone, and may be im-
" proved, and more ſucceſsfully applied, when
" the ſame ſhall be diſcovered to Perſons learned

“in the Science of Phyſick; now for encouraging the ſaid *Joanna Stephens* to make a Diſcovery thereof, and for providing her a Recompence, in caſe the ſaid Medicines ſhall be ſubmitted to the Examination of proper Judges, and by them be found worthy of the Reward hereby provided; may it pleaſe Your Majeſty that it may be enacted, and be it enacted by the King's moſt excellent Majeſty, by and with the Advice and Conſent of the Lords Spiritual and Temporal, and Commons, in this preſent Parliament aſſembled, and by the Authority of the ſame, That out of all or any the Aids or Supplies granted to His Majeſty for the Service of the Year One thouſand ſeven hundred and thirty nine, there may, and ſhall be applied and paid to the ſaid *Joanna Stephens*, or her Executors, Adminiſtrators, or Aſſigns, the Sum of Five thouſand Pounds, upon Condition that ſhe ſhall, with all convenient Speed, after the paſſing of this Act, make ſuch Diſcovery for the Uſe of the Publick of the ſaid Medicines, and her Method of preparing the ſame, in ſuch manner as his Grace *John* Lord Archbiſhop of *Canterbury*, the Right Honourable *Philip* Lord *Hardwicke*, Lord High Chancellor of *Great Britain*, the Right Honourable *Spencer* Earl of *Wilmington*, Lord Preſident of the Council, the Right Honourable *Francis* Earl *Godolphin*, Lord Privy Seal, his Grace *Lionel* Duke of *Dorſet*, Lord Steward of His Majeſty's Houſhold, his Grace *Charles* Duke of *Grafton*, Lord Cham-

" berlain of His Majeſty's Houſhold, his Grace " *Charles* Duke of *Richmond* and *Lenox*, his " Grace *John* Duke of *Montagu*, the Right Honourable *Henry* Earl of *Pembroke* and *Montgomery*, the Right Honourable *Richard* Earl " of *Scarborough*, the Right Honourable *Henry* " Lord Viſcount *Lonſdale*, the Right Reverend " *Martin* Lord Biſhop of *Glouceſter*, the Right " Reverend *Thomas* Lord Biſhop of *Oxford*, the " Right Honourable *Arthur Onſlow* Eſquire, " Speaker of the Honourable Houſe of Commons, the Right Honourable *Henry Hyde* Eſquire, commonly called Lord Viſcount *Cornbury*, the Right Honourable *Charles* Lord *Baltimore* in the Kingdom of *Ireland*, the Right " Honourable Sir *Robert Walpole* Knight of the " moſt noble Order of the Garter, and Chancellor of the Exchequer, the Right Honourable " *Stephen Poyntz* Eſquire, the Honourable *Thomas Townſhend* Eſquire, the Reverend Doctor " *Stephen Hales*, Doctor *Thomas Pellet*, Preſident " of the Royal College of Phyſicians, Doctor " *John Gardiner*, Doctor *Robert Nesbitt*, Doctor " *Simon Burton*, and Doctor *William Whitaker*, " Cenſors of the Royal College of Phyſicians; " Doctor *Peter Shaw*, *David Hartley* Maſter of " Arts, *William Cheſelden* Eſquire, Surgeon to " *Chelſea* Hoſpital, *Cæſar Hawkins* Eſquire, " Surgeon to his Royal Highneſs the Prince of " *Wales*, Maſter *Samuel Sharp* Surgeon to *Guy*'s " Hoſpital, or the Survivors of them, or the major Part of them, or of the Survivors of them,

" ſhall direct or approve; and upon this further
" Condition, that the ſaid Medicines ſo diſcovered, ſhall be examined and approved by the
" ſaid Lord Archbiſhop of *Canterbury*, *&c.* or
" the Survivors of them, or the major part of
" them, or of the Survivors of them: And the
" Commiſſioners of His Majeſty's Treaſury, or
" any Three or more of them, or the Lord
" High Treaſurer, or any Three or more of the
" Commiſſioners of the Treaſury for the time
" being, are hereby authorized and required to
" direct the Payment of, and iſſue the ſaid Sum
" of Five thouſand Pounds to the ſaid *Joanna*
" *Stephens*, her Executors, Adminiſtrators, or
" Aſſigns, upon her or their producing a Certificate under the Hands of the ſaid *John* Lord
" Archbiſhop of *Canterbury*, *&c.* or the Survivors of them, or the major part of them, or
" of the Survivors of them; expreſſing that the
" ſaid *Joanna Stephens* did, with all convenient
" Speed after the paſſing of this Act, make a
" Diſcovery, to their Satisfaction, for the Uſe
" of the Publick, of the ſaid Medicines, and of
" her Method of preparing the ſame; and that
" they have examined the ſaid Medicines, and
" are convinced by Experiment of the Utility,
" Efficacy, and diſſolving Power thereof."

Extract from the Gazette *of* June 19, 1739.

Whitehall, *June* 19.

" The following Paper is publiſhed by Order
" of the Truſtees named in an Act of Parliament
" intituled

" intituled, *An Act for providing a Reward to*
" JOANNA STEPHENS, *upon a proper Diſ-*
" *covery to be made by her, for the Uſe of the*
" *Publick, of the Medicines prepared by her for*
" *the Cure of the* STONE."

A full Diſcovery of the Medicines given by me JOANNA STEPHENS, *for the Cure of the* STONE *and* GRAVEL; *and a particular Account of my Method of preparing and giving the ſame.*

MY Medicines are a Powder, a Decoction, and Pills.

The Powder conſiſts of Egg-ſhells and Snails, both calcined.

The Decoction is made by boiling ſome Herbs (together with a Ball which conſiſts of Soap, Swines-creſſes burnt to a Blackneſs, and Honey) in Water.

The Pills conſiſt of Snails calcined, wild Carrot-Seeds, Burdock Seeds, Aſhen Keys, Hips and Hawes, all burnt to a Blackneſs, Soap and Honey.

The Powder *is thus prepared:*

Take Hens Egg-ſhells well drained from the Whites, dry and clean, cruſh them ſmall with the Hands, and fill a Crucible of the twelfth Size (which contains nearly three Pints) with them lightly; place it in the Fire, and cover it with a Tile; then heap Coals over it, that it may be in the Midſt of a very ſtrong clear Fire till the Egg-ſhells be calcined to a greyiſh White, and acquire an acrid ſalt Taſte: This will take up Eight hours at leaſt. After they are thus calcined, put them into a dry clean earthen Pan, which muſt not be above three Parts full, that there may be room for the Swelling of the Egg-ſhells in Slaking. Let the Pan ſtand uncovered in a dry room for two Months and no longer. In this Time the Egg-ſhells will become of a milder Taſte, and that Part which is ſufficiently calcined, will fall into a Powder of ſuch a Fineneſs, as to paſs through a common Hair-ſieve; which is to be done accordingly.

In like manner, take Garden-Snails with their Shells, cleaned from the Dirt, fill a Crucible of the ſame Size with them whole, cover it, and place it in a Fire as before, till the Snails have done ſmoaking, which will be in about an Hour, taking Care that they do not continue in the Fire after that. They are then to be taken out of the Crucible, and immediately rubbed in a Mortar to a fine Powder, which ought to be of a very dark grey Colour.

Note, *If* Pit-Coal *be made uſe of, it will be proper, in order that the Fire may the ſooner burn clear on the Top, that large Cynders, and not freſh Coals, be placed upon the Tiles which cover the Crucibles.*

Theſe Powders being thus prepared, take the Egg-ſhell Powder of ſix Crucibles, and the Snail-Powder of one, mix them together, rub them in a Mortar, and paſs them through a Cypreſs Sieve. This Mixture is immediately to be put up into

Bottles, which muſt be cloſe ſtopped and kept in a dry Place for Uſe. I have generally added a ſmall Quantity of Swines-Creſſes burnt to a Blackneſs, and rubbed fine; but this was only with a View to diſguiſe it.

The Egg-ſhells may be prepared at any Time of the Year, but it is beſt to do them in Summer. The Snails ought only to be prepared in *May*, *June*, *July*, and *Auguſt*; and I eſteem thoſe beſt which are done in the firſt of theſe Months.

The Decoction *is thus prepared:*

Take four Ounces and a half of the beſt *Alicant* Soap, beat it in a Mortar with a large Spoonful of Swines-Creſſes burnt to a Blackneſs, and as much Honey as will make the whole of the Conſiſtence of Paſte. Let this be formed into a Ball.

Take this Ball, and Green Chamomile or Chamomile Flowers, Sweet Fennel, Parſley and Burdock Leaves, of each one Ounce. When there are not Greens, take the ſame Quantities of Roots; Cut the Herbs or Roots, ſlice the Ball, and boil them in two Quarts of ſoft Water half an hour, then ſtrain it off, and ſweeten it with Honey.

The Pills *are thus prepared:*

Take equal Quantities by Meaſure, of Snails, calcin'd as before, of wild Carrot Seeds, Burdock Seeds, Aſhen Keys, Hips and Hawes, all burnt to a Blackneſs, or, which is the ſame thing, til they have done ſmoaking; mix them together, rub them in a Mortar, and paſs them through a

Cypreſs Sieve. Then take a large Spoonful of this Mixture, and four Ounces of the beſt *Alicant* Soap, and beat them in a Mortar with as much Honey as will make the whole of a proper Conſiſtence for Pills. Sixty of which are to be made out of every Ounce of the Compoſition.

The Method of giving theſe Medicines is as follows:

When there is a Stone in the Bladder or Kidneys, the Powder is to be taken three Times a day, *viz.* In a Morning after Breakfaſt, in the Afternoon about five or ſix, and at going to Bed. The Doſe is two Drachms *avoirdupoiſe*, or 54 $\frac{3}{4}$ Grains, which is to be mixed in a large Tea-cup full of White-wine, Cyder, or ſmall Punch; and half a Pint of the Decoction is to be drank, either cold or milk-warm after every Doſe.

Theſe Medicines do frequently cauſe much Pain at firſt; in which Caſe it is proper to give an Opiate, and repeat it as often as there is occaſion.

If the Perſon be coſtive during the Uſe of them, let him take as much Lenitive Electuary, or other Laxative Medicine as may be ſufficient to remove that Complaint, but not more: For it muſt be a principal Care at all times to prevent a Looſeneſs, which would carry off the Medicines; and if this does happen, it will be proper to increaſe the Quantity of the Powder, which is aſtringent, or leſſen that of the Decoction, which is laxative, or take ſome other ſuitable Means by the Advice of Phyſicians.

During the Uſe of theſe Medicines, the Perſon ought to obſtain from ſalt Meats, red Wines, and Milk, drink few Liquids, and uſe little Exerciſe, that ſo the Urine may be the more ſtrongly impregnated with the Medicines, and the longer retained in the Bladder.

If the Stomach will not bear the Decoction, a ſixth Part of the Ball made into Pills muſt be taken after every Doſe of the Powder.

Where the Perſon is aged, of a weak Conſtitution, or much reduced by Loſs of Appetite, or Pain, the Powder muſt have a greater Proportion of the calcin'd Snails than according to the foregoing Direction; and this Proportion may be increaſed ſuitably to the Nature of the Caſe, till there be equal Parts of the two Ingredients. The Quantity alſo of both Powder and Decoction may be leſſened for the ſame Reaſons. But as ſoon as the Perſon can bear it, he ſhould take them in the above-mentioned Proportions and Quantities.

Inſtead of the Herbs and Roots before-mentioned, I have ſometimes uſed others, as Mallows, Marſh-mallows, Yarrow red and white, Dandelion, Water-Creſſes, and Horſe-Radiſh Root, but do not know of any material Difference.

This is my Manner of giving the Powder and Decoction. As to the Pills, their chief Uſe is in Fits of the Gravel, attended with Pain in the Back and Vomiting, and in Suppreſſions of Urine from a Stoppage in the Ureters. In theſe Caſes, the Perſon is to take five Pills every Hour Day and Night, when awake, till the Complaints be removed. They will alſo prevent the Formation of Gravel and Gravel-ſtones in Conſtitutions ſubject to breed them, if ten or fifteen be taken every Day.

J. STEPHENS.

June 16, 1739.

Extract from the Gazette *of* March 18, 17$\frac{39}{40}$.

Whitehall, March 18, 17$\frac{39}{40}$.

“Yeſterday Mrs. *Stephens* received the Five Thouſand Pounds Reward, aſſigned to her by an Act of Parliament on the Diſcovery of her Medicines for the Stone, and Proofs made of their *Utility*, *Efficacy*, and *Diſſolving Power*. And the following Accounts relating thereto are publiſhed by Order of the Truſtees named in the ſaid Act.”

At a Meeting of the Truſtees appointed by an Act of Parliament to examine Mrs. Stephens's *Medicines, on* Wedneſday March 5. 17$\frac{39}{40}$, *in the Prince's Chamber adjoining to the Houſe of Lords, Four Perſons appeared before them on whom theſe Medicines had been tried,* viz.

1. Mr. *Gardiner* of *Fetter-Lane*, aged 61, who had the uſual Symptoms of a Stone in the Bladder, with violent Pains for ſeveral Years. He was ſearched by Mr. *Nourſe*, Surgeon, *Dec.* 30, 1738, when both he, and Mr. *Wall*, Apothecary, felt a Stone in the Bladder. Mr. *Gardiner* took the Me-

dicines about eight Months, voided many Pieces of Stone in that time, was freed from all his Symptoms, and being ſearched again, firſt by Mr. *Sharp*, *Sept.* 14, 1739, and then on the 30th of *November* following by Mr. *Nourſe*, Mr. *Cheſelden*, Mr. *Sainthill*, and Mr. *Belcher*, Surgeons, at *Child*'s Coffee-houſe in St. *Paul*'s *Church-yard*, no Stone could be found.

2. *Peter Appleton* of *Black-Fryars*, aged 67; who had the Symptoms of a Stone in the Bladder for more than ſeven Years, with exceſſive Pains for the five laſt Years of that Time. He was ſearched *July* 6, 1739, by Mr. *Sharp*, and found to have a Stone in the Bladder; which Stone was alſo felt by Dr. *Pellet*, Dr. *Nesbit*, Dr. *Whitaker*, and Dr. *Hartley*, and judged by all preſent to be a large one. He took the Medicines for about five Months, during which time he voided a very large quantity of Stone in Flakes and ſmall Fragments. He grew quite free from all his Complaints, and was ſearched again, firſt by Mr. *Sharp*, *Nov.* 9, and afterwards by thirteen Phyſicians and Surgeons, *Nov.* 30, at *Child*'s Coffee-houſe in St. *Paul*'s *Church-yard*, but no Stone could be found.

3. *Henry Norris*, of *Leather-Lane*, aged 55; who had the Symptoms of a Stone in the Bladder for about a Year and a half. *Aug.* 17, 1739, he was ſearched at St. *George*'s Hoſpital by ſeveral Phyſicians and Surgeons, who all felt the Stone. He took the Medicines about four Months, and voided only a thick Sediment in that time, how-

ever he was entirely freed from all his Symptoms; and being ſearched again, *Dec.* 14. at St. *George*'s Hoſpital, by eight Phyſicians and Surgeons, no Stone could be found.

4. *William Brighty* of *Colcheſter*, aged 79, who had the Symptoms of a Stone in the Bladder for more than three Years. He was ſearched *Sept.* 8. 1739, at *Guy*'s Hoſpital by Dr. *Gardiner* and Mr. *Sharp*, and found to have a Stone. He took the Medicines for about four Months, voided many Pieces of Stone during that time, became free from all his Symptoms, and being ſearched again at *Guy*'s Hoſpital, *Jan.* 19, 17$\frac{39}{40}$, by Dr. *Gardiner*, Mr. *Sharp*, and Mr. *Belcher*, no Stone could be found.

After theſe Perſons and other Evidence had been produced, the following Certificate, being that which is required by the Act of Parliament, was ſigned by all the Truſtees that were preſent at this Meeting, except Dr. *Pellet* and Dr. *Nesbit*, who having ſome Doubts with Reſpect to the Words *Diſſolving Power*, choſe to give the ſeparate Certificates hereunto annexed.

The Certificate required by the Act of Parliament.

March 5, 1739.

We whoſe Names are underwritten, being the major Part of the Truſtees appointed by an Act of Parliament entitled, *An Act for providing a Reward to* Joanna Stephens, *upon a proper Diſcovery to be made by her, for the Uſe of the Publick, of the Medicines*

cines prepared by her for the Cure of the Stone, do certify, That the ſaid *Joanna Stephens* did, with all convenient Speed after the paſſing of the ſaid Act, make a Diſcovery to our Satisfaction, for the Uſe of the Publick, of the ſaid Medicines, and of her Method of preparing the ſame; and that we have examined the ſaid Medicines, and are convinced by Experiment of the *Utility, Efficacy, and diſſolving Power thereof.*

Jo. Cant.
Hardwicke C.
Wilmington P.
Godolphin C. P. S.
Dorſet.
Montagu.
Pembroke.
Baltimore.
Cornbury.
M. Glouceſter.

Tho. Oxford.
Ste. Poyntz.
Stephen Hales.
Jo. Gardiner.
Sim. Burton.
Peter Shaw.
D. Hartley.
W. Cheſelden.
C. Hawkins.
Sam. Sharp.

Dr. Pellet's *Certificate.*

I am ſatisfied from Experience, and do hereby certify, That the Medicines publiſhed by Mrs *Stephens* for the Cure of the Stone in the Bladder, are often uſeful and efficacious in that Caſe. Witneſs my Hand.

March 5, 1739. *Tho. Pellet.*

Dr. Neſbit's *Certificate.*

The Caſe of *Appleton* I take to be as ſtrong a Proof of the Utility and Efficacy of Mrs. *Stephens*'s Medicines within the Meaning and Intent of the

Act for providing a Reward to *Joanna Stephens*, *&c.* as can be had from one Experiment during the Life of the Patient, becauſe I am thoroughly ſatisfied that *Appleton* had a Stone in his Bladder before he took the Medicines, and I do now believe he has not one.

March 5, 1739. *Robt. Neſbit.*

PRACTICAL OBSERVATIONS *concerning Mrs.* STEPHENS's *Medicines.*

WHEN Mrs. *Stephens* communicated her Method of preparing and giving her Medicines, it was thought proper to relate every minute Caution and Circumſtance obſerved by her. But as there are ſeveral things in the foregoing Receipt no ways eſſential to theſe Medicines, it may now be reduced to a greater Simplicity.

Firſt then, as to the Roots and Herbs made uſe of in the Decoction, Mrs. *Stephens* herſelf never thought them of much Importance, ſeveral Perſons have taken the Medicines with perfect Succeſs tho' they were not uſed, nor does it appear from the Experience of Phyſicians that they poſſeſs any diſſolving Virtue. They may therefore be uſed or omitted, or any other Roots, Herbs, *&c.* put in, according to the Circumſtances of the Patient's Caſe.

Secondly, The Seeds directed in the Receipt to be burnt to Blackneſs are ſtill of leſs Importance, all their particular Properties being deſtroyed by this Procedure.

Thirdly, As the Snails are not ordered by Mrs. *Stephens* to be burnt to Whiteneſs, that is, to a Lime, it will appear from the preceding Experiments of Dr. *Hales*, with other Conſiderations, that they have no diſſolving Efficacy.

Leaving out therefore the things which are of ſmall or no Conſequence, and reducing the Doſes of the others to the neareſt convenient Quantities, we may direct thus for a Perſon that has a Stone in the Kidney or Bladder, *viz.*

Let him take two Scruples, two and an half, or a Drachm of calcined Egg-ſhells *three times every day in any proper Liquor, drinking after each Doſe the third Part of the following Decoction*;

Take two Ounces, two and an half, or three of Alicant Soap, *ſlice it thin, and diſſolve it by boiling in a quantity of ſoft Water ſufficient to make a Pint and an half of the Decoction. Strain it, and ſweeten it with Honey or Sugar to the Taſte.*

N. B. Twenty Grains make a Scruple, and three Scruples make a Drachm.

The Powder may be taken in Water, ſmall Beer, Wine, Wine and Water, or any other Liquor that is not acid. For it is not proper to abate the alcaline Quality of theſe Medicines by giving the Powder in Punch, Cyder or any acid Liquor.

The Quantity of Liquor in which the Powder is taken ſhould not be leſs than three or four Spoonfuls, becauſe of the great Acrimony of its Taſte. Some Perſons mix the Powder with the Draught, and take them together; to which there is no Objection, unleſs the Powder ſhould curdle it. This happens ſometimes, and I believe partly from the Acrimony of the Powder, and partly from the Hardneſs of the Water, with which the Decoction is made. So that it is highly proper to uſe the ſofteſt Water that can be had, even where the Patient takes the Powder and Draught ſeparately, leſt the ſame thing ſhould happen in the Stomach. In making the Decoction, Care ſhould alſo be taken that the Veſſel, if a Copper one, be well tinned, becauſe the alcaline Salts of the Soap will corrode Copper, as Dr. *Hales* obſerves above, and may thereby occaſion great Diſorders in the Stomach and Bowels.

Part of the Soap may be made up into Pills with Honey or a Syrup, if that Form be more agreeable. But it would occaſion great Heat and Oppreſſion at the Stomach, with immoderate Thirſt to take the whole Quantity in this Way; whereas moſt Stomachs will bear from two to three Ounces in a day in Decoction, the general Objection to the Soap in that Form being not from its Offenſiveneſs to the Stomach, but diſagreeable Taſte.

As to the times of taking, they may be ſuited to every one's Convenience. Where the Patient takes the largeſt of the Quantities above-mentioned, *viz.* three Drachms of Powder, and three Ounces of Soap every day, it may perhaps be better to divide it into four Doſes. I mention all theſe Particulars, that thoſe who ſtand in need of the Medicines may be the better enabled to ſurmount the Difficulties of taking them, which are indeed very great to ſome Perſons.

The middle Quantity here mentioned, *viz.* two Drachms and an half of Powder, and two Ounces and an half of Soap every day, is nearly the Quantity which Mrs. *Stephens* has given of late. The largeſt, *viz.* three Drachms of Powder and three Ounces of Soap, is certainly far preferable, and what ſhe has often given, where the Stomach and other Circumſtances of the Patient would admit. And the leaſt, *viz.* two Drachms of Powder and two Ounces of Soap, is the ſmalleſt that can be depended upon, where there is a Stone in the Kidney or Bladder; tho' it may ſometimes happen that a Stone ſhall be diſſolved by a leſs. There have alſo been a few Caſes of Succeſs, notwithſtanding ſome conſiderable Omiſſions in taking, and Irregularities in other Reſpects. But in general it is entirely requiſite, that the Urine be conſtantly charged with the Efficacy of the Lime and Soap to as great a degree as the Stomach and urinary Paſſages will allow, and that the Patient avoid all Exceſſes. Theſe are Cautions common to the other Branches of Phyſic, but one cannot well ſay too much in this particular Caſe, becauſe the Bulk and Nauſeouſneſs of the Medicines are ſo apt to make the Patient tranſgreſs when he begins to be eaſy, and to forget the Pains he has ſuffered, till he fall into them again.

The Proportion of Powder and Soap above-directed will generally keep the Body in the middle way between a coſtive and a lax State, both which are to be avoided; and eſpecially the laſt, as the Medicines would in part be carried off thereby. But if it ſhould be otherwiſe, this Proportion may generally be varied ſo as to ſuit the Caſe, the Powder being aſtringent, and the Soap laxative. Proper Aſtringents or Laxatives may alſo be added to the Decoction, or taken in any other Form; but in caſe of a violent Looſeneſs, immediate Recourſe muſt be had to Opiates.

The Method of preparing the Egg-ſhells, is firſt to calcine them in a Crucible till they acquire a pungent fiery Taſte, and from being black become white again, that is, to burn them to a Lime. Afterwards to expoſe them to a dry Air for a Month, ſix Weeks, or two Months, that is, till they ſlacken or fall into an impalpable Powder in great meaſure: And laſtly, to ſift this Powder off from the groſſer Parts which will not ſlacken. This muſt be put up in Bottles well corked, and is what I call *Calcined Egg-ſhells*, or *the Powder*, in the foregoing Directions. And it is to be obſerved that calcined Egg-ſhells are a thing of a Nature very different from Egg-ſhells merely dryed and powdered; being a Lime, and nearly allied to the other ſorts of Limes made from Lime-ſtone, Chalk, Cockle-ſhells, *&c.*

The Time required for Calcination is different according to the Size of the Crucible and Intenſeneſs of the Heat. If the Crucible hold a Quart, eight or ten Hours are neceſſary, tho' the Heat be very intenſe. Almoſt every body is apt to burn the Egg-ſhells too little, by which means the Powder becomes of ſmall Efficacy, and I fear there is much of this weak Powder prepared in ſeveral Places.

However, there are ſome Caſes in which a weak, low-burnt Powder may be uſeful, as it is leſs aſtringent, leſs apt to offend the Stomach, irritate the urinary Paſſages, and occaſion Thirſt. A high-burnt Powder may be rendered milder by being expoſed to the Air, but then it ſeems to loſe its diſſolving Efficacy in proportion.

As to the Soap, Mrs. *Stephens* aſſures us from long Experience that *Alicant* is preferable to any other of the foreign Soaps commonly ſold in *London*, as *Caſtile*, *Venice*, *Naples*, *Joppa*, both as to its diſſolving Virtue and Agreeableneſs to the Stomach. But I believe any of the above-mentioned foreign Soaps will anſwer, as they are all made of the ſame Materials with *Alicant Soap*, *viz*. Lime, fixed alcaline Salt, and Oil of Olives; and probably in the ſame manner, and with the ſame Proportions nearly. *Alicant Soap* may be known by the following Marks. The Cakes are thicker and generally ſhorter than thoſe of *Caſtile*. Their out-ſide is white, or if the Soap has been kept very long, yellow. When cut it appears within to be marbled with blue, and this blue turns white by being expoſed to the Air for a Day or two. It has alſo very frequently little Lumps of a chalky or limy Subſtance to be found in it.

It is common after a few Days uſe of theſe Medicines to have a great Increaſe of Pain in making Water. This ariſes probably from the Irritation which the Acrimony of the medicated Urine gives to the Parts that are already tender and ſore by the fretting of the Stone. But then as the medicated Urine becomes habitual to the Paſſages by the continued Uſe of the Medicines, and more eſpecially as it renders the Surface of the Stone rotten and ſoft, theſe Pains generally go off in a ſhort time, and the Patient becomes eaſy and able to move about without any great Inconvenience, even tho' it may require ſome Months or perhaps Years to compleat the Cure. During the Increaſe of the Pains, Opiates, Emollients, warm Baths, Fomentations, a ſoft Diet and Reſt are proper. Reſt is alſo proper tho' the Pains be not great, becauſe the Urine may by this means be retained better in the Bladder, and by conſequence will both become ſtronger and have longer time to act upon the Stone. It is likewiſe highly requiſite during the Uſe of theſe Medicines to abſtain very much from Liquids, ſince the Urine will be more ſtrongly impregnated with their Efficacy in proportion to the Smallneſs of its quantity.

When a Perſon has a Stone in the Bladder, it is very dangerous to deſiſt from the Uſe of theſe Medicines before the Cure be compleated. For as the Stone is often rendred very rugged and unequal by the diſſolving Power of the Urine, if it become alſo hard, which it certainly will when the Medicines are left off, it muſt occaſion exquiſite Pain. While a Perſon takes them, the diſſolving Power of the medicated Urine will make the Surface ſoft, and perpetually break off the ſharp

Points that would occaſion Pain. And there are many Inſtances of Perſons who have been very eaſy notwithſtanding that they have voided large rough Pieces of Stone daily, and continued to do ſo for a conſiderable time, and who therefore muſt have had a large rough Stone in the Bladder at the time that they were eaſy. It does however ſometimes happen that the Pieces fall off ſo faſt, and retain ſuch a degree of Hardneſs, as to occaſion great Irritation and Pain for ſome Months, as in the Caſes of Mr. *Bolton* and Dr. *Kirkpatrick*. But it is ſo much the more requiſite upon this account not to deſiſt from the Medicines.

The ſame Reaſons hold good with reſpect to a Stone in the Kidney. But indeed it is always dangerous in this Caſe not to take a diſſolving Medicine. For Stones of the Kidneys often fall into the Ureters, at the ſame time that they are too large to paſs, and ſo occaſion fatal Suppreſſions. Whereas if a Perſon has taken theſe Medicines for any time, and continues to take them, tho' a Stone ſhould fall into the Ureter, yet ſince its Surface muſt be in ſome meaſure ſoft, ſince alſo the Urine acquires perpetually a ſtronger diſſolving Power from its Retention, and a greater Force from its increaſed quantity, it will at laſt make its own way. For even natural incruſting Urine has ſometimes wore a paſſage in a Stone that has obſtructed the Ureter. Mrs. *Stephens* aſſures us that ſhe has never known a fatal Suppreſſion ariſe during the Uſe of her Medicines.

Where the Medicines are genuine and good, and the Patient takes the full quantity without Intermiſſion, and is regular in other reſpects, I make no doubt but the medicated Urine will exert a diſſolving Power upon all the Stones both of the Kidneys and Bladder; tho' in a very different degree according to the different Conſtitution of the Patient, and Nature of the Stone. Thus old Perſons are generally cured in a few months, whereas in young ones the Operation of the Medicines is for the moſt part very ſlow. But there are ſome contrary Inſtances of both ſorts.

I have now taken theſe Medicines for three Years and an half, and yet have moſt of my Complaints remaining, tho' in a leſs degree. But then I have voided Scales and Fragments of Stone at Intervals during the whole time, which I never did before. About half a Year ago I voided ſeveral very large Fragments, one weighing 17 Grains while wet, and 12 $\frac{1}{2}$ when dry, with a great Number of rotten Scales, and am much better able to bear a Coach over the Stones ſince that time. Theſe large Fragments had evident Marks of a diſſolving Power exerted upon them.

The Symptoms of a Stone in the Bladder are Pain and Difficulty in making Water, a ſudden Stoppage in a full Stream, Forcings to go to Stool, violent Pain at the Neck of the Bladder upon Motion, eſpecially on Horſe-back, or in a Coach over the Stones, with bloody Water upon the ſame occaſions. And I do not know any Diſorder, beſides a Stone in the Bladder from whence all theſe Symptoms can ariſe. But it is beſt that the Patient be ſearched by the Catheter, which may be done with very little Pain and no Danger. For if a Stone be found, he will then perſiſt in the Uſe of the Medicines with more Steadineſs and Conſtancy; if not, the Examination may however afford ſome Light to the Caſe. But it muſt not be concluded haſtily that there is no Stone, becauſe one cannot be found by the Catheter, eſpecially if all the fore-mentioned Symptoms concur to make it probable that there is one.

One cannot ſo certainly determine when there is a Stone in the Kidney, nor diſtinguiſh a large one from ſuch as are ſmall enough to paſs. However, where a Perſon has Heat, and Pain in the Loins, frequent Vomitings, frequent Provocations to make Water, and bloody Water upon Motion, there is abundant Reaſon to begin the Medicines. If the Cauſe of theſe Complaints ſhould prove to be a Stone ſo ſmall that common Methods would have taken place, the Medicines will effect a Cure much ſooner. And it very often happens that the Uſe of them helps to explain ſuch Caſes as are obſcure and doubtful. Thus ſince no new Concretion can be formed while they are taken, every the leaſt Scale or Fragment that is voided, is a Proof that there is a Stone ſomewhere in the Paſſages. The Colour, Size, Shape and Degree of Hardneſs of the Scales or Fragments may help to determine ſomething concerning the Nature and Size of the Stone. If they be voided after previous Pains in the Region of the Ureter, one may conjecture that they come from the Kidney; if otherwiſe, from the Bladder, eſpecially if they be large.

When a Perſon that is ſubject to breed Gravel and Gravel-ſtones has cleared his Kidneys of theſe, by taking the Medicines in full quantity for ſome time as above-directed, he may afterwards preſerve himſelf free by much leſs, perhaps by half a Drachm of the Powder and half an Ounce of Soap every day. A ſoft mucilaginous Diet, with the conſtant and plentiful uſe of Honey, are alſo excellent Preſervatives, and will in many Caſes be ſufficient of themſelves to prevent the Generation of Gravel and Stone.

Thus I have delivered a ſhort Summary of all that I judge to be of Importance concerning the Method of preparing and giving Mrs. *Stephens*'s Medicines. And I hope the foregoing Obſervations, with the Caſes formerly publiſhed, amongſt which are many deſcribed with great Accuracy, will be ſufficient to direct all that labour under calculous Complaints how they may take theſe Medicines with Safety and Succeſs.

How far making the Decoction with Lime-Water, as propoſed by Dr. *Hales*, will be an Improvement, muſt be left to Trial. It appears to be a very probable Method of increaſing the Virtue of the Medicines without adding to their Bulk. It ſeems alſo reaſonable to try capital Soap-lees in Milk to the quantity of an Ounce and an half, or two Ounces every day. This Method would be leſs nauſeous than Mrs. *Stephens*'s Medicines, and appears by ſome late Trials to be well worth purſuing. Half an Ounce of capital Lees requires half a Pint of Milk to defend the Throat and Stomach from its Acrimony; or ſomewhat more if the Lees be ſtrong. Perhaps if the calcined Egg-ſhells were taken at the ſame time, a leſs quantity of capital Lees might be ſufficient; but I believe an Ounce and an half, or two Ounces may be taken every Day with perfect Safety; however, it is neceſſary to be very careful and attentive in the Uſe of ſo violent a Cauſtic.

Explanation of the Figures.

Fig. 1. and 2. repreſent the Stone taken from Mr. *Underwood. See View of the preſent Evidence,* &c. *pag.* 112 and 204. It is to be obſerved that Mr. *Underwood* did not fall into thoſe violent Pains which were probably the Occaſion of his Death, till ſome time after he had left off the Medicines, that is, not till the Stone thus corroded and in ſome meaſure ſoftened by the medicated Urine had become hard again. There is a Hole quite thro' the Stone on the right-hand, and the ſtriated Appearances in theſe Figures are the ſeveral Coats of it.

N. B. *All the Figures are as big as the Life.*

Fig. 3. and 4. repreſent a Stone taken from *Richard Symonds.* He was 78 Years old, had been afflicted with the Stone for about three, and was quite worn out by his Pains, a Looſeneſs, Palſy and Old Age. He took the Medicines almoſt ſix Weeks, but not in full quantity, on account of his Looſeneſs and great Weakneſs. He voided many Scales, his Urine depoſited a Sediment like wet Mortar, and he was almoſt entirely freed from his calculous Complaints. Upon this he left off the Medicines, and died about a Fortnight after, having ſcarce felt any Uneaſineſs from the Stone in that Interval. Mr. *Sharp* opened his Body, and took the Stone here repreſented out of his Bladder. The Parts of the external Shell which are left on, are in ſeveral Places more than $\frac{1}{8}$th of an Inch thick. This Stone was ſo ſoft while wet that it crumbled with the ſlighteſt Touch of the Fingers; which was probably the Reaſon of his being eaſy, notwithſtanding that he had ſo large and ſo rough a Stone in the Bladder. It was alſo covered with a very thin Coat of a reddiſh brown Colour, ſeeming to have been generated in the Interval of his Diſuſe of the Medicines; for the Parts underneath were white, as if acted upon by the medicated Urine.

Fig. 5. and 6. repreſent a Stone taken from the Bladder of *Robert Wood* by Mr. *Hawkins*. He was 68 Years old, infirm and aſthmatical, and died of a Pleuriſy after he had taken the Medicines for about half a Year, in which time he voided ſeveral Pieces. As to his Pains they were rather leſs during his Uſe of the Medicines than for ſome time before. The Manner in which the medicated Urine acted upon this Stone is very ſingular; the upper Part being worn away into a ſharp Edge, on each Side of which the ſeveral Coats appear, whereas the lower Part ſeems almoſt untouched.

Fig. 7. repreſents a Stone taken from the Bladder of the *Honourable Edward Carteret Eſq;* *Poſt-maſter General*, by Mr. *Sharp*; 8, 9. the ſame ſawed into two; 10. the Kernel of another taken alſo from his Bladder; 11. Part of its Shell. It may be ſuppoſed that theſe two Kernels were left in his Bladder when he diſcontinued the Medicines (See *View of the preſent Evidence*, &c. *pag.* 114.) about two Years before he died, and that the hard pale-brown Shells were generated in that Interval by the incruſting Power of his Urine returned to its natural State. The Half Kernels of *Fig.* 8, 9. are of a whitiſh grey Colour, as if acted upon by the medicated Urine, and lie looſe in the Shells. The Stone 10, 11. when whole, rattled upon being ſhaken, and was broken by an accidental Fall upon a Stone-Pavement. Mr. *Carteret* died of an Apoplectical Diſorder.

Fig. 12, 13, 14, 15, 16. repreſent five ſmall, angular Stones, with plain poliſhed Sides, on which the Order of the Coats is viſible. Mr. *Sharp* took them out of the Bladder of Mr. *Stanton*, who died ſuddenly, aged about 70. He had taken the Medicines for about two Months before his Death, had received great Eaſe from them, and voided a few Scales. Now as all Stones grow by the perpetual Addition of Coats quite round, it is evident that theſe in which the ſeveral ſucceſſive ones are viſible, and by conſequence the internal Structure expoſed, muſt have been in a decreaſing State.

Nov. 12, 1740.

FINIS.

BRITISH MUSEUM

Fig. 1

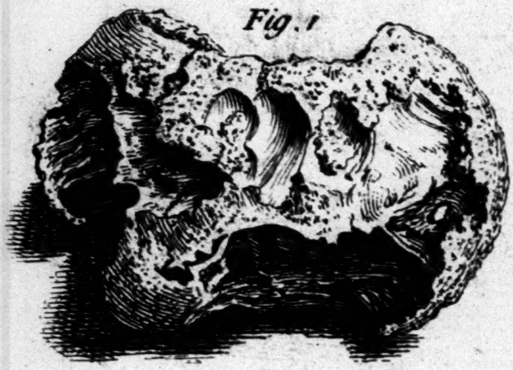


Fig. 2

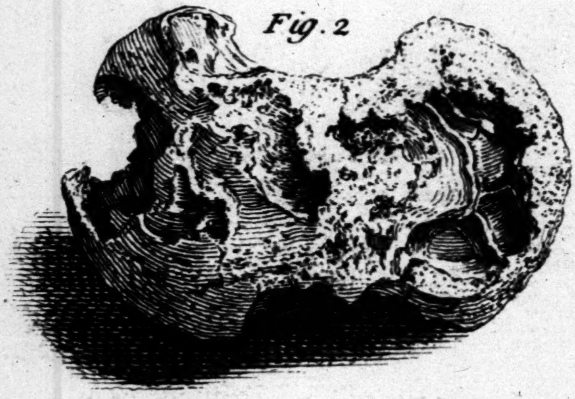


Fig. 7

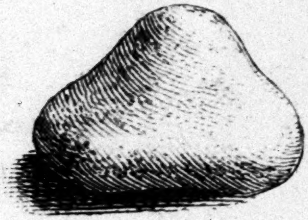


Fig. 8

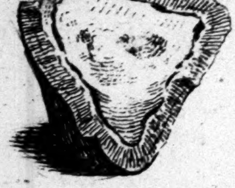


Fig. 9

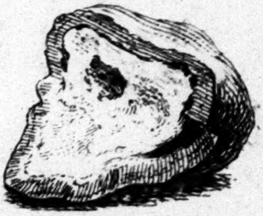


Fig. 3

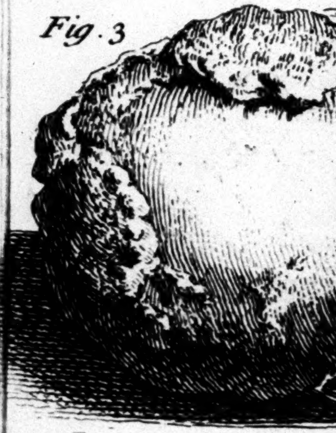


Fig. 4

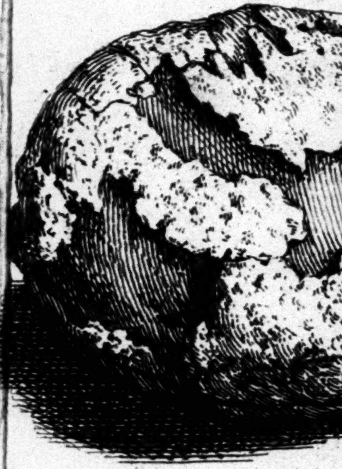
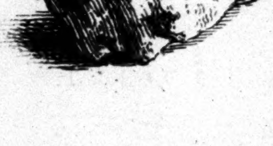
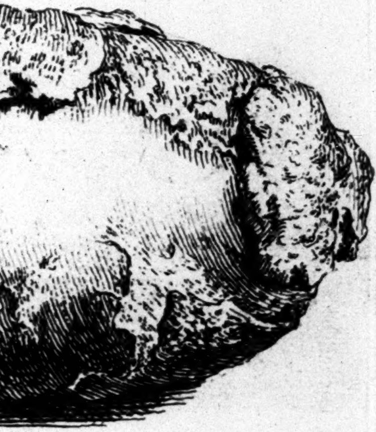


Fig. 10





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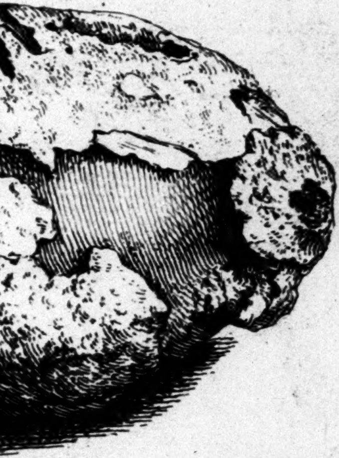

Fig.11

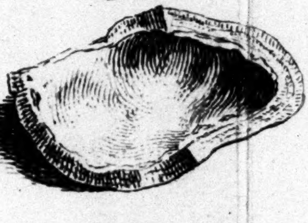

Fig.5

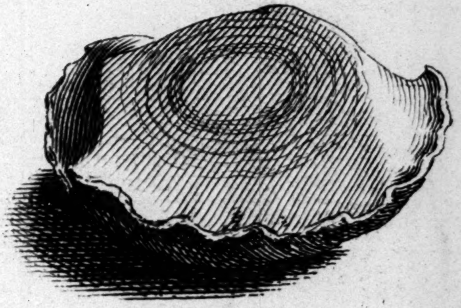

Fig.6

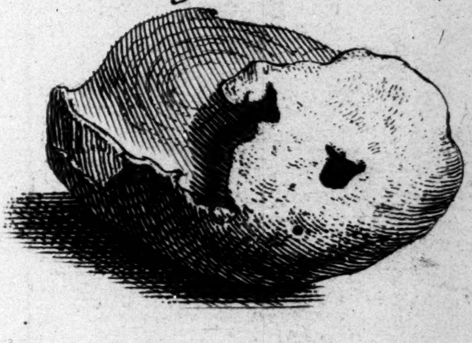

Fig.12

Fig.13

Fig.14

Fig.15

Fig.16

G:Vander Gucht. Delin: & Sculp.